

What is claimed is:

1. A control unit for electric power steering apparatus provided with an angle detecting device which supplies a carrier wave signal ($\sin \omega t$) constituted by a predetermined frequency and generates a sin signal ($\sin \omega t \cdot \sin \theta$) having a wave shape obtained by modulating an amplitude of said carrier wave signal by $\sin \theta$ and a cos signal ($\sin \omega t \cdot \cos \theta$) having a wave shape obtained by modulating the amplitude by $\cos \theta$, for detecting a rotation angle θ of the motor necessary for the control for applying a steering assist force by the motor to a steering system of a vehicle,

wherein the control apparatus is provided with an abnormal region judging map constituted by two values comprising a value corresponding to said $\sin \theta$ and a value corresponding to said $\cos \theta$ and constituted by a normal region and an abnormal region, and judges an abnormality of said angle detecting device by mapping said $\sin \theta$ and said $\cos \theta$ respectively calculated from said sin signal and said cos signal to said abnormal region judging map.

2. The control unit for electric power steering apparatus as claimed in claim 1, wherein said abnormal region judging map sets the value corresponding to said $\sin \theta$ to a value in an x-coordinate and sets the value corresponding to said $\cos \theta$ to a value in a Y-coordinate, and a region surrounded by a quadrangle α structured on a region constituted by an X-axis and a Y-axis orthogonal to each other around an origin in which both of the

values in the X-coordinate and the Y-coordinate are zero, and a quadrangle β smaller than said quadrangle α constituted around said origin forms a normal region.

3. The control unit for electric power steering apparatus as claimed in claim 1 or 2, wherein the control apparatus detects said $\sin \theta$ and said $\cos \theta$ in synchronous with said carrier wave signal or at an integral multiple of cycle of the cycle of said carrier wave.

4. The control unit for electric power steering apparatus as claimed in any one of claims 1 to 3, wherein the control apparatus is provided with an angle detecting process circuit detecting an abnormality of said angle detecting device from said carrier wave signal, said $\sin \theta$ and said $\cos \theta$ and said abnormal region judging map, and doubly monitoring the abnormality of said angle detecting device by said angle detecting process circuit and said abnormal region judging map.

5. A control unit for electric power steering apparatus provided with an angle detecting device which supplies a carrier signal ($\sin \omega t$) constituted by a predetermined frequency and generates a sin signal ($\sin \omega t \cdot \sin \theta$) having a wave shape obtained by modulating an amplitude of said carrier wave signal by $\sin \theta$ and a cos signal ($\sin \omega t \cdot \cos \theta$) having a wave shape obtained by modulating the amplitude by $\cos \theta$, for detecting a rotation angle θ of the motor necessary for the control for applying a steering assist force by the motor to a steering system of a vehicle,

wherein the control apparatus is provided with an angle processing means respectively detecting the sin angle signal ($\sin \theta$) and the cos angle signal ($\cos \theta$) from said sin signal and said cos signal, and outputting a rotation angle signal formed by a signal formed by said cos angle signal and a signal formed by said sin angle signal, and said motor is controlled on the basis of said rotation angle signal.

6. The control unit for electric power steering apparatus as claimed in claim 5, wherein said motor is constituted by a three-phase brushless motor, the signal formed by said cos angle signal is constituted by a one-bit signal displaying positive or negative of the value of said cos angle signal, and the signal formed by said sin angle signal is constituted by two one-bit signals displaying respective results obtained by judging a size by two threshold values judging a level of the value of said sin angle signal.

7. The control unit for electric power steering apparatus as claimed in claim 5 or 6, wherein the control apparatus detects said sin angle signal and said cos angle signal from said sin signal and said cos signal respectively in synchronous with said carrier wave signal or at an integral multiple of cycle of the cycle of said carrier wave.

8. The control unit for electric power steering apparatus as claimed in any one of claims 5 to 7, wherein the control apparatus is provided with an auxiliary angle processing means constituted by said angle processing means, and a main angle

processing means for detecting said rotation angle θ , and controlling said motor on the basis of said rotation angle signal output by said auxiliary angle processing means in place of said rotation angle θ detected by said main angle processing means in the case that said main angle processing means is out of order.

9. The control unit for electric power steering apparatus as claimed in claim 8, wherein a current applied to said motor is constituted by a sine-wave current in the case of being controlled on the basis of said rotation angle θ , and a current applied to said motor is constituted by a rectangular current in the case of being controlled on the basis of said rotation angle signal.